

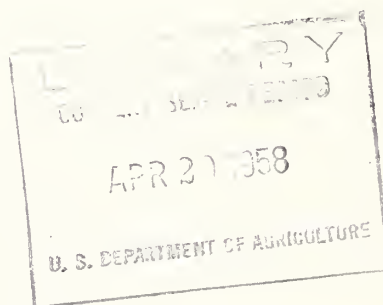
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* R E P O R T -
of the
THIRTEENTH NORTHEASTERN CORN IMPROVEMENT CONFERENCE

New York City
February 28 and March 1, 1958



Reported by
Herbert L. Everett, Secretary Pro tem.

Department of Plant Breeding
Cornell University, Ithaca, New York
March 1958



TABLE OF CONTENTS

INITIAL SESSION, FEBRUARY 28	2
The Problem of Stalk Rot	2
Stalk Breakage Work Sheet	3
EVENING SESSION, FEBRUARY 28	4
SATURDAY MORNING SESSION, MARCH 1	5
Control of Birds in Test Plots	5
Cytoplasmic Pollen Sterility	5
Hybrids of the Future	5
Report of the Committee on Stalk Rot	6
Committee on Registration of NE Hybrids	7
Committee on Uniform Tests of 200 Maturity	7
Committee on Uniform Tests of 300-500 Maturity	7
Committee on Uniform Tests of 600-700 Maturity	7
Committee on Uniform Tests of 800-900 Maturity	7
Committee on Pollinating Supplies	8
Committee on Nomenclature of Cytoplasmic Sterility	9
Committee on Disease and Insect Pests of Corn	9
Committee on Preservation of Open-Pollinated Varieties	9
ROSTER OF ATTENDANCE	11
OFFICERS AND COMMITTEE MEMBERSHIP, 1958	13

REPORT OF THE THIRTEENTH NORTHEASTERN CORN IMPROVEMENT CONFERENCE

New York City, New York
February 28 and March 1, 1958

The meetings of the Thirteenth Northeastern Corn Improvement Conference were held in the Henry Hudson Hotel, New York City.

A total of 29 workers representing 10 states, the U.S. Department of Agriculture, 2 Canadian Provinces, and 2 producers of open-pedigree hybrids, were in attendance.

INITIAL SESSION, FEBRUARY 28

The meeting was called to order by Chairman R.M. Bailey at 1:15 p.m. The first order of business was the appointment by the chairman of a nominating committee consisting of R.G. Rothgeb, chairman, J.C. Anderson and H.T. Stinson.

A letter from Merle T. Jenkins, secretary of the conference was read by Chairman Bailey. Dr. Jenkins tendered his resignation as Conference secretary in view of the fact that he completed service with the U.S.D.A. in February 1958. A motion was made by J.C. Anderson to accept this resignation with regret and to send a letter of thanks to Dr. Jenkins. C.W. Boothroyd seconded this motion and it was unanimously approved.

Chairman Bailey requested H.L. Everett to serve as secretary protem for the Conference. It is hopefully anticipated that Dr. Jenkins successor with the U.S.D.A. at Beltsville will assume the duties of permanent secretary at future Northeastern Corn Improvement Conferences. Precedence for this position has been established in the Report of the Second Northeastern Corn Improvement Conference (1947).

Next, Dr. G. Fred Somers, Administrative Advisor, greeted the Conference. He noted a continuing interest on the part of NE State Experiment Station Directors in the activities of the Conference. Due to the fact that the Conference does not represent a technical committee, Dr. Somers pointed out that his function is one of maintaining contact with the Directors rather than acting as an official administrative advisor.

The remainder of the afternoon session was devoted to the program agenda. The first major discussion centered around the problem of stalk breakage. The topic was introduced by L.L. Huber, chairman of the committee on stalk rot. Huber called upon C.W. Boothroyd.

THE PROBLEM OF STALK ROT

A discussion of the problem of breakage in corn involves the consideration of a complex of factors. The disease organism, other environmental factors, such as nutrition and water availability, as well as the hereditary make up of the particular corn inbred or hybrid are all a part of this complex. Boothroyd suggested that a cooperative Northeastern Regional Project might be established to carry out critical research on this problem.

A summary of tests carried out in New York and titled "Testing Corn Inbreds for Stalk Rot Resistance" was made available to the conferees by Dr. Boothroyd. The report is attached to these minutes.

At the completion of Boothroyd's report, L.L. Huber reviewed the various factors which are said to influence stalk breakage. A stalk breakage work sheet was introduced so that specific hybrids might be classified for stalk strength. These evaluations follow:

STALK BREAKAGE WORK SHEET

Stalk breakage is a major item on the agenda of the corn conference this year. To expedite discussion the Stalk Rot Committee suggests that you indicate on the following check list your rating of stalk strength in categories of 1 (best) to 5 (poorest). If you believe the stalk strength to be associated mostly with a thick rind or with stalk rot, please indicate by the symbols 'tr' or 'sr'. This check list of inbreds is not complete. Add others in which you are interested.

Stalk strength cat. 1-5 Evaluation by Station						Stalk strength cat. 1-5 Evaluation by Station					
Inbreds	1	2	3	4	5	Inbreds	1	2	3	4	5
Oh 26	4	2				Pa 32	1				
Ia B8		5	1			Pa 33	2	1			
Ill Hy			5			Pa 11		2			
Ia Os420					2	W 83				1	
Ia Os426				2		W M13R			1		
W 23				1	2	W 37A		2			
W 22	2	4				Pa 54		1		1	1
C 103	6					Oh 43	1	4			
Ia L317			3		2	Oh 45	3	2			
Ia L289			1		2	Oh 40B		1	1		
Ia 153		3				W Va 12		1			
Wis 153R		3	1			W Va 5			2		
Ia 205		2	1			Oh 26A	2				
Ill A			1	1	1	Ia B14	1			1	
Ill R53		1				Ia B6	3				
Ind Wf9	1	4				J 47		1	1		
Ind 38-11			2		2	J 48	1				
A 374	1					K 148		2			
NY 3		1	2			CI 317B			1		
NY 16		1		1	1	CI 42A		2			
Oh 07	2	2				CI 38B		1			
Oh 41			1	2		CI 3A			1		
Oh 51	1	1		1		CI 28A				1	
Oh 29			1			CI 21E			1		
Ill M14		1	2	1		C 102			1	1	
CI 187-2		2				Ia B10		3			
A 73		1	1			Ia B9		2	2		
Oh 5				1		W 24			1		
Ill Hy2		3	1			Ia 159LI	1				
Oh 51A	2	2	1	1		A 401		1			1
						A 158	1	1		1	

General discussion of standability in corn by many conferees focused to important relationships of stalk rot disease, thickness of stalk and percentage of living cells in pith, slowness of ripening, and stalk sugar content. Dimmock stated that early removal of the developing ear results in resistance to stalk breakage and may be related to sugars remaining in the stalk. Anderson noted that the stalk rot organism (*Gibberella* sps.) may enter the stalk at internodes 5-7 which are well above ground level. Thus, disease entry may be had via degenerate adventitious buds rather than solely through the roots.

Huber and Rothgeb pointed to the need for a cooperative experimental approach to determine the relative importance of the many variables involved in determining the presence and degree of expression of the stalk rot disease.

J.G. Buchert reported that all of the factors which seem to contribute to stalk rot resistance or standability may reflect an auxin basis. If the organism for stalk rot were inhibited by auxin, the testing of inbreds for this material would serve as a selection basis for stalk rot resistance. Certainly, the need for a consideration of the problem by plant physiologists is underscored by this and similar suggestions by conference participants.

Buchert noted that a cooperative experiment with D.L. Matthews is in progress to test corn inbreds for reaction to 2-4D. Such reactions are apparently similar to response to auxins.

Huber called upon Dr. Somers to convey to the Station Directors the interest of the Conference in a cooperative project on the problem of stalk breakage. Somers suggested that any past project submitted to the Directors should be brought up to date and presented once again. Such a project would require a title, list of objectives, and a statement of justification. If the action seems appropriate, the Directors may approve such a project without funds. Chairman Bailey called upon the Stalk Rot Committee (L.L. Huber, Chairman; J.C. Anderson; C.W. Boothroyd) to look up the earlier project and prepare a new version for submission to the Station Directors as a Regional Project.

Chairman Bailey appointed a new standing Committee on Uniform Tests of 600-700 Maturity consisting of D.L. Matthews, Chairman; H.T. Stinson; and H.L. Everett. The meeting was adjourned at 3:30 o'clock so as to provide opportunity for standing committees to meet and conduct their business.

EVENING SESSION, FEBRUARY 28

Following a banquet-dinner in the West Room of the Henry Hudson Hotel, Chairman Bailey called upon J.C. Anderson to serve as toastmaster. Anderson noted that three active members of the Conference are retiring in 1958. The conference recognized with deep appreciation the past contributions of L.L. Huber, Merle T. Jenkins, and R.G. Wiggins. Toastmaster Anderson called upon Huber for a statement on past, present and future progress in corn breeding in the northeast. Dr. Huber presented vivid recollections on this subject and a stimulating appraisal of present opportunities.

H.L. Everett gave an illustrated talk on the Philippines based on experiences during a recent stay of more than a year at the College of Agriculture, University of the Philippines located in Los Banos. The backgrounds, goals, and accomplishments of the I.C.A.--Cornell University contract with the University of the Philippines--were discussed briefly. A recent article by Dean Uichanco (Science Vol. 127 (3296) 1958) summarizes this information.

Following this presentation, Dr. H.W. Indyk gave an illustrated paper on several years' data related to irrigation and fertilizer research on corn in Delaware. General conclusions were that added water represented a most profitable operation in two of the last three years. Increased fertilizer gave maximum response when used on the irrigated plots. There was a lively discussion of this topic and R. Funk noted that similar studies in New Jersey were in agreement with the research findings reported.

The final paper of the evening program was a consideration of research with dwarf hybrid corns by D.L. Matthews. The dwarf materials have performed as well as normals under many variable environmental situations. The standability of the dwarfs is outstanding; however, the yield ability is not as consistently superior. In the discussion that followed Matthews' talk, the conference showed wide interest in further experiments with dwarf hybrids.

SATURDAY MORNING SESSION, MARCH 1

The meeting was called to order by Chairman Bailey at 8:40 a.m. A discussion was initiated by the chairman to consider what fields of corn improvement need major attention by plant breeders, pathologists, entomologists, physiologists, and others in the next decade.

Topics discussed included:

Control of birds in test plots: Suggested procedures introduced were fire crackers on rope, chemical sprays (S.B. Pennock Company), recordings of distress calls, and sublethal voltage electric wires. No single approach was seen to solve this problem, however.

Cytoplasmic pollen sterility: J.G. Buchert presented data on the genic restoration of "S" type cytoplasmic sterility by the Ky21 source. There is an indication of male gamete selection in maintaining selfs from the cross Al58S⁴ (Al58 x Ky21). A similar condition was noted in P39 (sweet corn) and M14 material.

Another observation by Buchert was a consistent 6 (fertile):5 (sterile) segregation ratio in the test cross of heterozygous restored "T" steriles to completely "T" sterile stocks.

Hybrids of the future: Huber, Bailey, Dimmock, and Brawn contributed thoughts as to the present day gamut of problems and their implications for the future. For example, drought reaction is accentuated by heavy plant populations and high fertility. Hybrids of general adaptation are

the goal of northeast corn improvement. It was pointed out that extra early hybrids have opened up new areas of corn production and that, in a sense, hybrid corn has meant more to the northern peripheral areas than to the corn belt itself.

At 10:30 a.m. Chairman Bailey called for reports from committees.

REPORT OF COMMITTEE ON STALK ROT

L.L. Huber called upon C.W. Boothroyd to present the report. Boothroyd described a cooperative project which will be carried out in 1958. The following inbred groups will be collected by the New York Station:

Group I.	Resistant	Susceptible
	Oh 07	Ind. L317
	Conn C103	Ind. 38-11
	Oh 43	Ia. Os420
Group II.	Oh 43	Ia. Os420
	Oh 51A	Pa 54
	Oh 26	Minn. A401

These inbreds will be distributed and grown at the following stations: Connecticut, E.S.F.E. (Massachusetts), Delaware, Maryland, Macdonald (Canada), Maine, New Jersey, New York, Pennsylvania, and West Virginia.

Two plantings will be made at each location-- one at time of normal planting and a second replication of the stalk rot inbreds three weeks later. Each entry will be planted so as to have 50 plants per row with 10" between plants, and the usual distance between rows. Color slides will be taken at silking time and of important observations thereafter.

Two weeks after the recorded 1/2 silk date, the plants will be pushed lightly to test stalk strength. These tests will be continued at weekly intervals until final harvest. Observations on blight, aphid, and/or other environmental conditions will be taken and other materials may be compared with the basic groups at the discretion of the individual stations. Climatological data and moisture content in grain will also be recorded if possible.

All combination single-cross seed for the two groups will be made up in Pennsylvania and New Jersey. Sugar content will be determined at the Connecticut Station and rind slides will be prepared at New York.

All data is to be coordinated at the 1959 conference.

J.C. Anderson
C.W. Boothroyd
L.L. Huber, Chairman

It was moved by R.G. Rothgeb that the report be accepted.

Motion was seconded by Dr. D.R. Butler and passed.

COMMITTEE ON REGISTRATION OF NE HYBRIDS

Chairman Jones (via letter) reported that no new hybrids were entered for NE registration in 1958. D.L. Matthews stated that the double cross (Oh 51A x Oh 26A) (Minn. A206 x Pa. 109F) will be further tested in 1958 and, if again outstanding, will be presented in 1959 for NE designation.

COMMITTEE ON UNIFORM TESTS OF 200 MATURITY

In 1957, seed was produced of 82 predicted double-crosses, in sufficient amount for several tests to be made in 1958. The following inbreds were used in this series: W103, WH, WD, W59E, C0106, C0107, C0109, C0110, C0111 and MT42. The following stations will grow these tests: Ottawa, Macdonald (Quebec), New York, Pennsylvania, and E.S.F.E. (Massachusetts).

R.M. Bailey
R.G. Wiggans
R.I. Brown
F. Dimmock, Chairman

It was moved by H.T. Stinson that the report be accepted.

Seconded and passed.

COMMITTEE ON UNIFORM TESTS OF 300-500 MATURITY

Chairman Huber stated that no report would be made for this maturity group.

COMMITTEE ON UNIFORM TESTS OF 600-700 MATURITY

Chairman Matthews stated that a test of inbred substitutions in Indiana 608, (Wf9 x Hy) (Ill. A x Ind. Tr.) is available. Substitutions include C.I. 42A for Hy, M14 and Pa. 54 for Ill. A and TrR for Tr. Three stations indicated an interest in growing this test in 1958: Pennsylvania, New York, and E.S.F.E. (Massachusetts).

COMMITTEE ON UNIFORM TESTS OF 800-900 MATURITY

The Committee Chairman, J.C. Anderson noted that several new inbreds from the Pennsylvania Station are available for testing this year. Three-way hybrids of these inbreds on the single crosses (Pa. 83 x Pa. 94) and (Wf9 x Pa. 94) will be grown by the Pennsylvania, New Jersey and Maryland Stations.

COMMITTEE ON POLLINATING SUPPLIES

The following report was read by Chairman Matthews:

Orders for two years supply of tassel bags of the following specifications: 7" x 4 3/4" x 15 1/2", 40# wet strength Kraft sealed with water proof adhesive throughout were coordinated for conference members in 1957 as follows:

Massachusetts	6 M
New Jersey	50 M
Pennsylvania (Botany)	27 M
ESFX Research	100 M
ESFX Stock Seed	100 M
Total	283 M

The low bid was \$7.47/M by the Union Bag and Paper Corporation, Savannah, Georgia. This cooperative purchase saved participating members at least \$.42/M or 5.6%.

Bids have been requested on silk bags of the following specifications for the 1958 program: 3" x 8", 40# wet strength glassine, sealed with water proof adhesive throughout, AND 2 1/2" x 6 1/2", 40# wet strength glassine, sealed with water proof adhesive throughout.

The Carter Paper Company which supplied the 1956 pool purchase of silk bags was also asked to describe and bid upon the substitute paper used in 1956. A supply situation required the use of a slightly different type of paper which proved to be exceptionally good.

Members were asked to declare their interest and potential needs February 14 with the following results:

<u>No. Reporting</u>	<u>Bag Size</u>	<u>Amount</u>
4	3 x 8	279M
3	2 1/2 x 6 1/2	45M
6	Not Interested	
2	Indefinite	
4	No Response	

H.L. Everett
R.S. Snell
D.L. Matthews, Chairman

It was moved by J.C. Anderson that the report be accepted.

Seconded and passed

COMMITTEE ON NOMENCLATURE OF CYTOPLASMIC STERILITY

No report was submitted to the Conference; however, there was a general discussion related to nomenclature proposals for the International Genetics Congress (Canada 1958). Brawn suggested that the Conference should have an official voice at the Congress to support the system described in previous reports and widely used by Conference membership.

It was moved by H.T. Stinson that Dr. D.F. Jones be designated to represent the Conference at the 1958 International Genetics Congress in opposing the adoption of the Greek alphabet for designating cytoplasm in publications.

Seconded by R.I. Brawn and passed.

COMMITTEE ON DISEASE AND INSECT PESTS OF CORN

No report was made to the Conference.

COMMITTEE ON THE PRESERVATION OF OPEN-POLLINATED VARIETIES

The need for preserving germplasm of open-pollinated varieties has been discussed at two recent meetings of the Conference. These old varieties are rapidly disappearing and action must be taken at once if we wish to preserve them for some of the valuable genes which they may possess.

If you know of, or can locate, open-pollinated varieties of sweet or field corn that may have merit, please send a small sample to R.M. Bailey, Deering Hall, University of Maine, with notations as to where collected and possible valuable characters. Periodically the collections will be forwarded to the Plant Introduction Station at Geneva with necessary copies of the notes. Dr. Dolan, Regional Coordinator of NE-9 will then assign Plant Introduction numbers to each and will arrange to preserve them for future use be interested corn breeders.

R.M. Bailey, Chairman

H.T. Stinson pointed out that it may be desirable in the future to retain rare cytoplasms in addition to exotic genomes. Hence, the exotic sources should be used as seed parents in crosses to more common maize stocks.

Chairman Bailey next called for a report of the Nominating Committee consisting of R.G. Rothgeb, Chairman; H.T. Stinson; and J.C. Anderson. The committee nominated H.L. Everett as Chairman and M.W. Johnson as Vice-Chairman, 1958-59.

It was moved by H. Yegian that nominations be closed and the nominees elected.

Seconded by C.W. Boothroyd and passed

A final consideration was introduced by Chairman Bailey. It is highly desirable to retain mutual contacts with the NE-32 project group--Sweet Corn Technical Committee.

It was suggested by R.G. Rothgeb that the Executive Committee of the NECC be enlarged to include the Chairman of the NE-32 project. This proposal will be brought to the attention of the NE-32 committee and acted upon at the 1959 N.E.C.C.

Time and place of the 1959 meeting was made the responsibility of the Executive Committee.

Meeting adjourned at 12:00 noon.

11 ROSTER OF ATTENDANCE

Canada

Brawn, Robert I.	Macdonald College	Montreal
Dimmock, Fred	Central Experiment Farm	Ottawa

Connecticut

Buchert, J.G.	Connecticut Agr. Exp. Station	New Haven
Stinson, Harry T.	" " " "	" "

Delaware

Indyk, Henry W.	University of Delaware	Newark
Somers, G. Fred	" " "	"

Maine

Bailey, R.M.	University of Maine	Orono
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Maryland

Rothgeb, R.G.	University of Maryland	College Park
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Massachusetts

Matheson, James A.	Eastern States Farmers' Exch.	W. Springfield
Matthews, David L.	" " " "	" "
Yegian, Hrant M.	University of Massachusetts	Amherst

New Hampshire

Higgins, Leroy J.	University of New Hampshire	Durham
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New Jersey

Anderson, John C.	Rutgers University	New Brunswick
Funk, C. Reid	" "	" "
Hastings, Desmond	" "	" "
Mayes, McKinley	" "	" "
Snell, Robert S.	" "	" "

New York

Barnes, J.M.	Cornell University	Ithaca
Barton, Donald W.	New York Agr. Exp. Sta.	Geneva
Boothroyd, Carl W.	Cornell University	Ithaca
Everett, H.L.	" "	"
Johnson, A.A.	" "	"
Thompson, J.C.	" "	"
Walden, David B.	" "	"
Wheeler, Donald A.	" "	"

Pennsylvania

Butler, Dan
Huber, L.L.

Penna. Farm Bureau
Penna. State University

Harrisburg
University Park

Washington D.C.

Heerman, Ruben

SESD, USDA

D.C.

West Virginia

Johnson, Melvin W.

West Virginia University

Morgantown

OFFICERS AND COMMITTEE MEMBERSHIP, 1958

Administrative Advisor

G. Fred Somers

Executive Committee

H.L. Everett, Chairman
M.W. Johnson, Vice-Chairman
R.M. Bailey

Committee on Registration of NE Hybrids

D.F. Jones, Chairman
L.L. Huber
R.G. Rothgeb

Committee on Uniform Tests of 200 Maturity

F. Dimmock, Chairman
R.M. Bailey
R.I. Brawn

Committee on Uniform Tests of 300-500 Maturity

L.L. Huber, Chairman
R.G. Wiggans
H.M. Yegian

Committee on Uniform Tests of 600-700 Maturity

D.L. Matthews, Chairman
H.T. Stinson
H.L. Everett

Committee on Uniform Tests of 800-900 Maturity

J.C. Anderson, Chairman
R.G. Rothgeb

Committee on Pollinating Supplies

D.L. Matthews, Chairman
R.S. Snell
H.L. Everett

Committee on Nomenclature of Cytoplasmic Sterility

D.F. Jones, Chairman
R.S. Snell
H.L. Everett
G.H. Stringfield

Committee on Disease and Insect Pests of Corn

C.C. Wernham, Chairman
J.C. Anderson
C.W. Boothroyd

Committee on the Preservation of Open-Pollinated Varieties

R.M. Bailey, Chairman

Committee on Stalk Rot

L.L. Huber, Chairman
J.C. Anderson
C.W. Boothroyd

